DATA EVALUATION RECORD

1. **CHEMICAL:** NTN 33893 129099
   Shaughnessy No. ~~129059~~

2. **TEST MATERIAL:** Technical NTN 33893, 95.3%.

3. **STUDY TYPE:** Acute Toxicity Test for Freshwater Fish, Rainbow Trout (Salmo gairdneri), Static Test.

4. **CITATION:** Grau, R. 1988. "Acute Toxicity of NTN 33893 Technical to Rainbow Trout (Salmo gairdneri)". Bayer AG Institute for Environmental Biology, D-5090 Leverkusen-Bayerwerk, FRG. Laboratory Report No. 101303. Submitted by Mobay Corporation, Agricultural Chemicals Division, P.O. Box 4913, Kansas City Missouri 64120. US EPA MRID No. 420553-16.

5. **REVIEWED BY:**

   Dana Lateulere, Biologist
   Ecological Effects Branch
   Environmental Fate and
   Effects Division

   Signature: Dana Lateulere
   Date: 12/6/91

6. **APPROVED BY:**

   Ann Stavola, Section Head, 5
   Ecological Effects Branch
   Environmental Fate and
   Effects Division

   Signature: Ann Stavola
   Date: 12/20/91

7. **CONCLUSIONS:** The 96 hour LC50 based on mean measured concentrations of NTN 33893 technical to rainbow trout in a static system is 229.1 mg a.i./L as determined by the Binomial method. The LOEC was determined to be 96.2 mg a.i./L based on irregular swimming behavior. The NOEC was determined to be 52.1 mg a.i./L, the lowest concentration tested. NTN 33893 technical is classified as practically non-toxic to rainbow trout based on the 96 hour LC50. This study is classified as supplemental but may be upgraded if test vessel and loading data is submitted (see 14a).

8. **RECOMMENDATIONS:**

9. **BACKGROUND:** This study was submitted as part of registration and EUP requirements.

10. **DISCUSSION OF INDIVIDUAL TESTS:** N/A.

11. **MATERIALS AND METHODS:**

A. **Test Animals:** Rainbow trout were obtained from Forellenzucht Linn, D-5940 Lennestadt, FRG. They were acclimatized in the test water and at the test temperature for at least 14 days. During this period they were fed a commercial fish diet. They were not fed for at least 48 hours before nor during the test. The average bodyweight at the beginning of the test was 1.3 +/- .6 g, the average body length 5.3 +/- .6 cm.

B. **Test System:** The test substance was directly applied to the test water without using solvents and was distributed as uniformly as possible by means of an Ultra-Turrax. One aquarium was used per concentration. 60 hours prior to initiation of the exposure the aquaria were filled with water and aerated with about 200 ml of air per minute. After addition of the test substance to the test water the test was started by introducing 10 fish into each aquarium in an order determined by a table of random numbers.

C. **Dosage:** The nominal concentrations tested were 50, 89, 158, 281 and 500 mg a.i./l and an untreated control without additives. All reported calculations refer to nominal values, because analytical control of the concentrations showed that the measured values were greater than 80% of the nominal values in all aquaria over the whole test period.

D. **Design:** The fish were examined daily for symptoms of intoxication and mortality. Symptoms of intoxication included swimming behavior slightly irregular, lying on side/back and staggering. Oxygen and pH were determined daily in each aquarium, the temperature was measured in the control aquarium.

E. **Statistics:** If possible the LC50 values with 95% confidence intervals were calculated for each 24-hour period according to the method of THOMPSON and WEIL.

12. **REPORTED RESULTS:** The 96-hour LC50 of the technical active ingredient was calculated to be 211 mg a.i./L with an interval of 158 to 281 mg a.i./L. This range results from the two neighboring concentrations in which 0 and 100% mortality occurred and which are different by the factor of 1.8. The lowest lethal concentration (LLC) was 281 mg a.i./L. The highest concentration without toxic effect

(NOEC) was 50 mg a.i./L. All calculations refer to nominal values, because the analytical control of the active ingredient concentrations showed that the concentrations measured during the entire test period were greater than 80% of the nominal values.

13. **STUDY AUTHOR'S CONCLUSIONS/QUALITY ASSURANCE MEASURES:** The acute toxicity of NTN 33893 technical to rainbow trout was determined to be 211 mg a.i./L with a range from 158 - 281 mg a.i./L. The lowest lethal concentration was 281 mg a.i.,/L and the NOEC was 50 mg a.i./L.

Quality Assurance Inspection was conducted for compliance verification by the Quality Assurance Unit. It was also stated that this study was conducted in compliance with the Good Laboratory Practice Standards, 40 CFR Part 160.

14. **REVIEWER'S DISCUSSION AND INTERPRETATION OF STUDY RESULTS:**

A. **Test Procedure:** The test procedures were in accordance with Subdivision E, and SEP guidelines except for the following deviations:

- The test aquaria were not described (dimensions, material).
- Measured concentrations, although taken, were not used for statistical analysis. During the exposure period the aquaria were aerated, therefore measured concentration should have been utilized.
- Recommended hardness is 40 to 48 mg/L, the test water had a hardness of 230 mg/L as $CaCO_3$.
- Recommended temperature for rainbow trout is 12^{o}C; the test temperature averaged 15.4^{o}C.
- The temperature during the exposure period should not fluctuate more than 1^{o}C; the temperature during this test fluctuated from 14.8 to 16.4^{o}C (1.6^{o}).
- Loading was not reported.

B. **Statistical Analysis:** Toxanol was used to determine the LC50 and the 95% confidence interval. Reviewer used mean measured concentration values for analysis.

C. **Discussion/Results:** The test concentrations were measured at 0 hour, 24 hour not agitated, 96 hour, and 96 hour not agitated. The reviewer determined the mean measured concentration based on these data: 52.1, 96.2, 169.8, 309.0, and 466.5 mg a.i./L. The 96 hour LC50 based on mean measured concentrations of NTN 33893 technical to rainbow trout in a static system is 229.1 mg a.i./L as determined by the Binomial method. The LOEC was determined to be 96.2 mg a.i./L based on irregular swimming behavior. The NOEC was determined to be 52.1 mg a.i./L, the lowest concentration tested. NTN 33893 technical is classified as practically non-toxic to rainbow trout based on the 96 hour LC50.

D. **Adequacy of the Study:**

(1) **Classification:** Supplemental.

(2) **Rationale:** Test aquaria was not described, loading was not reported.

(3) **Repairability:** Yes, test aquaria material and dimensions, and loading data may be submitted to have study upgraded to core.

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Tabelle 1: Mortalitäten und Intoxikationssymptome
Mortality and Symptoms of Intoxication
(tot / Symptome / eingesetzt)
(dead / symptoms / tested)
(Beschreibung der beobachteten Symptome)
(description of symtpoms)

Nominal Konzentration Nominal concentration mg a.i./l	3 Stunden 3 hours	24 Stunden 24 hours	48 Stunden 48 hours	72 Stunden 72 hours	96 Stunden 96 hours
Kontrolle Control	0 / 0 /10	0 / 0 /10	0 / 0 /10	0 / 0 /10	0 / 0 /10
50	0 / 0 /10	0 / 0 /10	0 / 0 /10	0 / 0 /10	0 / 0 /10
89	0 / 0 /10	0 / 0 /10	0 /10 /10 SN	0 / 0 /10	0 / 0 /10
158	0 / 0 /10	0 /10 /10 AP, SN	0 /10/10 SR, AP	0 /10 /10 TS, SR	0 /10 /10 SR, TS
281	0 /10 /10 SN	6 /10 /10 SR, AP	10/10 /10	----	----
500	0 /10 /10 SN, AP	10/10 /10	----	----	----
LC50	--	265	211	211	211
Bereich / Range	--	220 - 320	158 - 281	158 - 281	158 - 281

Abkürzungen der Beschreibungen der beobachteten Intoxikationssymptome
Abbreviations used to describe the Symptoms of Intoxication
AP : Apathie
Apathetic
SN : Schwimmverhalten nicht mehr normal (leichtes Symptom)
Swimming behaviour shlightly irregular (light symptom)
SR : Seitenlage / Rückenlage
lying on side / back
TS : Taumelndes Schwimmen
Staggering
----: keine Angabe, da 100 % Mortalität erreicht
no entry due to 100 % mortality
-- : keine Berechnung möglich
no calculation possible

Tabelle 4: Gelöster Sauerstoff / dissolved oxygen (mg/l)

Nominal Konzentration Nominal concentration mg/l	0 Stunden 0 hours	24 Stunden 24 hours	48 Stunden 48 hours	72 Stunden 72 hours	96 Stunden 96 hours
Kontrolle Control	10,4	10,1	10,1	10,3	10,2
50	10,8	10,3	10,5	10,2	10,6
89	10,8	10,4	10,5	10,3	10,6
158	10,3	10,1	10,2	10,3	10,3
281	10,0	9,9	10,3	---	---
500	10,2	10,2	---	---	---

Tabelle 5: pH-Daten / pH-data

Nominal Konzentration Nominal concentration mg/l	0 Stunden 0 hours	24 Stunden 24 hours	48 Stunden 48 hours	72 Stunden 72 hours	96 Stunden 96 hours
Kontrolle Control	8,1	8,0	8,0	8,1	8,1
50	8,1	8,0	8,1	8,1	8,1
89	8,1	8,0	8,1	8,1	8,1
158	8,1	8,0	8,1	8,1	8,1
281	8,1	8,0	8,1	---	---
500	8,1	8,0	---	---	---

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BAYER AG
GESCHÄFTSBEREICH PFLANZENSCHUTZ
RESSORT FORSCHUNG/ABTEILUNG CE
INSTITUT FÜR PRODUKTINFORMATION
UND RÜCKSTANDANALYTIK

Monheim, October 13, 1987

RA-697
File: NTNFF

Analytical results / Fish water analysis
Study No. E 2800098-7 Test substance: NTN 33893 techn.

Active ingredient content in the test substance : NTN 33893 = 95.3 %

Fish species : Rainbow Trout

Sampling : in the centre of the aquarium (S.O.P. 1100)

Sample volume : 10 ml

Analytical method : RA-696 / October 2, 1987
HPLC with UV detection

Results:

	Concentration in mg a.i./l					
Nominal values	50	89	158	281	500	
Actual values at the time of sampling						
0 h	53.4	98.9	176	304	533	
24 h not agitated	51.5	91.4	167	298	400	
96 h	51.8	93.9	162	306		
96 h not agitated	51.8	100.5	174	328		

52.1 96.2 167.6 309 466.5

LATEULERE NTN 33893 TECH RAINBOW LC50

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CONC.	NUMBER EXPOSED	NUMBER DEAD	PERCENT DEAD	BINOMIAL PROB.(PERCENT)
466.5	10	10	100	9.765625E-02
309	10	10	100	9.765625E-02
169.8	10	0	0	9.765625E-02
96.2	10	0	0	9.765625E-02
52.1	10	0	0	9.765625E-02

THE BINOMIAL TEST SHOWS THAT 169.8 AND 309 CAN BE
USED AS STATISTICALLY SOUND CONSERVATIVE 95 PERCENT
CONFIDENCE LIMITS, BECAUSE THE ACTUAL CONFIDENCE LEVEL
ASSOCIATED WITH THESE LIMITS IS GREATER THAN 95 PERCENT.

AN APPROXIMATE LC50 FOR THIS SET OF DATA IS 229.0594

WHEN THERE ARE LESS THAN TWO CONCENTRATIONS AT WHICH THE
PERCENT DEAD IS BETWEEN 0 AND 100, NEITHER THE MOVING AVERAGE
NOR THE PROBIT METHOD CAN GIVE ANY STATISTICALLY SOUND RESULTS.

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